CLAIMS

1. An electromechanical switch, comprising:

a first electromechanical switch that is adapted to turn on and off based on a displacement of a first beam which is restorable by a relatively weak spring force; and

a second electromechanical switch that is adapted to turn on and off based on a displacement of a second beam which is restorable by a relatively strong spring force,

wherein in an initial condition, the electromechanical switch is brought into an off-state in which the first electromechanical switch is off and the second electromechanical switch is on.

2. The electromechanical switch according to claim 1, wherein the first beam is displaced from the initial condition by one of application and cancellation of a driving force such that the first electromechanical switch is tuned on, thereby bring the electromechanical switch into an on-state.

3. The electromechanical switch according to claim 1, wherein in a case that both of the first electromechanical switch and the second electromechanical switch are on, the displacement of the first beam and the displacement of the second beam are simultaneously canceled to perform a restoring operation so that the second electromechanical switch is turned off, thereby bring the electromechanical switch into an off-state.

4. The electromechanical switch according to claim 1, wherein the second beam starts to perform natural vibrations by turning off the second electromechanical switch; and

wherein the second beam is latched by one of application and cancellation of a driving force in a case where the second beam is returned to vicinity of a displacement position thereof at which the second electromechanical switch is turned off.

5. The electromechanical switch according to claim 1, wherein at least one of a displacement of the first beam and a displacement of the second beam is based on an electrostatic force.

6. The electromechanical switch according to claim 1, wherein at least one of a displacement of the first beam and a displacement of the second beam is based on an electromagnetic force.

7. The electromechanical switch according to claim 1, wherein at least one of a displacement of the first beam and a displacement of the second beam is based on a piezoelectric effect.

8. The electromechanical switch according to claim 1, wherein at least one of a displacement of the first beam and a displacement of the second beam is based on a thermal expansion.

9. The electromechanical switch according to claim 1, further

comprising a common fixed electrode, to which the first beam and the second beam face in parallel through an air gap,

wherein the first electromechanical switch is configured by the fixed electrode and the first beam; and

wherein the second electromechanical switch is configured by the fixed electrode and the second beam.

10. The electromechanical switch according to claim 9, wherein the air gap to the fixed electrode is set to be smaller than a maximum amplitude of natural vibrations of each of the first beam and the second beam.

11. The electromechanical switch according to claim 9, wherein the electromechanical switch is brought into an on-state only when the first electromechanical switch is on and the second electromechanical switch is on.

12. The electromechanical switch according to claim 1, wherein the first beam and the second beam are arranged in parallel to each other;

wherein a third beam enabled to be restored by a spring force, which is relatively weaker than the spring force of the second beam, is arranged in parallel thereto;

wherein the first electromechanical switch is configured by the first beam and the second beam; and

wherein the second electromechanical switch is configured by the second beam and the third beam.

13. The electromechanical switch according to claim 12, wherein the air gap between the second beam and each of the first beam and the third beam is formed according to a maximum amplitude of natural vibrations of the second beam.

14. The electromechanical switch according to claim 12, wherein in a case where all of displacements of the first beam, the second beam, and the third beam are canceled, the second beam is latched by displacing the third beam by one of application and cancellation of a driving force while the second beam is brought closer to the third beam by a mechanical probe.

15. The electromechanical switch according to one of claims 1 to 14, wherein the first electromechanical switch and the second electromechanical switch are placed in environment in which an air pressure differs from an atmospheric pressure.

16. The electromechanical switch according to one of claims 1 to 14, wherein the second electromechanical switch is off only for a time required by the first electromechanical switch to obtain predetermined isolation.

17. The electromechanical switch according to one of claims 1 to 14, wherein a cycle of natural vibrations of the second beam is equal to a time required by the first beam to reach a position at which the first beam obtains sufficient isolation.

18. The electromechanical switch according to one of claims 1 to 14, wherein a cycle of natural vibrations of the second beam is longer than a time required by the first beam to reach a position at which the first beam obtains sufficient isolation.

19. The electromechanical switch according to one of claims 1 to 14, wherein a cycle of natural vibrations of the second beam is shorter than a time required by the first beam to reach a position at which the first beam obtains sufficient isolation.

20. The electromechanical switch according to claim 1, wherein in a case where a state of a signal is switched from a passing state to a shielded state while the first electromechanical switch is on, the second beam reaches a position, at which the second beam obtains necessary isolation, until the first beam reaches a position required by the first beam to obtain predetermined isolation, and the second beam is returned to an initial latched state again.

21. The electromechanical switch according to claim 1, further comprising:

a lower spring movable electrode that is configured by the first beam;

a higher spring movable electrode that is configured by the second beam, and is arranged in parallel to the lower spring movable electrode; and

a fixed electrode that is disposed to face the first beam and the second beam,

wherein the first electromechanical switch includes the lower spring

movable electrode including the first beam and the first fixed electrode;

wherein the second electromechanical switch includes the higher spring movable electrode including the second beam and the first fixed electrode;

wherein the first beam and the second beams are mechanically connected to each other through a connecting portion; and

wherein the second beam is displaced in response to displacement of the first beam.

22. The electromechanical switch according to claim 21, wherein the second beam is connected to an input terminal; and

wherein the first beam and the second beam are connected to a first output terminal and a second output terminal, respectively.